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19 May 1989
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Ms Shelley Welker
U S Environmental Protection Agency
Region VII
726 Minnesota Avenue
Kansas City Kansas 86101

Dear Ms Welker

Enclosed are the quality assurance comments concerning Big River Mine Tailings (Revised Package) Desloge Missouri If you have any questions regarding this material please contact Fred Price at (703) 883 5395 or me at (703) 883 5843

Sincerely



Barry Nash
Group Leader
Hazardous Waste Systems

BN/cjk

Enclosure

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SUPERFUND RECORDS

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COMMENTS ON BIG RIVER MINE TAILINGS (REVISED PACKAGE)

Desloge Missouri

Fred T Price

17 May 1989

GENERAL DESCRIPTION OF THE FACILITY

The Big River Mine Tailings site is located in St Francois County near Desloge Missouri. The site covers approximately 500 acres and consists of mine tailings reported to be up to 100 feet thick. The tailings pile is the result of 30 years (1929 to 1958) of stockpiling lead mining wastes from a nearby mill. This particular tailings pile is one of many in the immediate area. The tailings containing Pb, Cd and Zn were transported to the site via a slurry pipeline.

A sanitary landfill (approximately 60 acres) is located on the south end of the site. This landfill is within the site boundaries and has been operating since 1973 with a state permit. Six monitoring wells were installed around the landfill in 1987.

An observed release to surface water and air has been scored and the ground water route has been evaluated. An eight page special studies waste addendum has been included with the documentation.

GENERAL COMMENTS

It appears from the HRS package that other tailings piles within the four mile radius of the air release could be aggregated. Reference 16 (topographic map) shows five additional tailings ponds within the four mile radius (Leadwood Elvins, Shaw, Flat River and Bonne Terre). It would seem that in order to remediate this site the risk from these tailings piles will have to be considered. Since all six tailings piles appear to have been produced by the same type of operation, affect the same population are subject to the same type of cleanup activities and would threaten the same air, ground water and surface water routes, you may wish to consider whether a rationale could be developed for aggregating these sites.

GROUND WATER ROUTE

Observed Release

If the mine tailings are as much as 100 feet thick at some site locations (Reference 3 page 1a) and the water table is encountered at depths of from 13.5 feet to 34 feet below the surface of the tailings pile (Reference 21), then it appears that an observed release to ground water should have been scored using the HRS. A background sample is not required in this situation. However, the depth to water table should be verified to rule out the possibility that a perched water table has been encountered.

This might be done by establishing the regional depth to the water table and checking to see that it is not significantly lower than 34 feet

The HRS does not evaluate mobility of hazardous substances therefore the argument that a release " would be a function of many different variables such as pH and solubility" does not apply

A previous request for information concerning analytical results from the six monitoring wells placed around the landfill in 1987 has not received a reply Do analytical data from the monitoring wells exist and do they support an observed release to ground water?

Route Characteristics

The interconnection of the Bonne Terre and Lamotte Formations has not been clearly demonstrated References 1, 2, 21, 22 and 32 cited in the aquifer description do not support the statement that "[n]o aquitards exist between the two formations of concern " One way of demonstrating interconnection would be to indicate in the documentation record at least one well log (Reference 22, 23 and 24) where the well penetrates into the Lamotte Formation and no confining layer is described in the well log

The depth from the lowest point of waste disposal/storage to the highest point of the water table should not be zero unless an observed release to ground water has been scored Zero indicates that the hazardous waste is in contact with the ground water, which constitutes an observed release

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Waste Characteristics

Cite the 7th edition of Sax rather than the 6th edition for the toxicity of lead and cadmium

Though the area of the mine tailings is given as "more than 600 acres in the documentation record, Reference 3 page 1a lists the area as approximately 500 acres Reference 16 (site map) shows an area labeled "site boundary" which is approximately 680 acres while the shaded area labeled "tailings pond" is approximately 530 acres Reference 13, page 2-4, indicates an area of 502 acres It appears from References 3, 13 and 16 that the area of mine tailings should be 500 to 530 acres

Reference 21 is cited as evidence that the average thickness of the tailings is 48 feet Since Reference 21 is drillers logs and in most cases does not mention tailings specifically, explain how the average thickness of 48 feet used in determining waste quantity was calculated

Targets

The references cited to support the use of the Bonne Terre aquifer for drinking water purposes are not conclusive. References 2, 8, and 36 do not state that the Bonne Terre is being used for a drinking water source.

Based on Reference 16 (map) it appears that the distance from the mine tailings pile to the nearest well is 3,452 feet rather than 3,200 feet.

If Reference 27 is not going to be used in the package, then delete it from the reference list. *Is used*

SURFACE WATER

Observed Release

The background and hit sample data given in the observed release are confusing. Are the data taken from Reference 9? If so, indicate it in the documentation record. Exact sample locations are not given in Reference 9. It would be helpful to locate the samples on Reference 16 (topographic map). The water sample data are taken from a summary table. Are the original data and QA/QC information on the data available? If so, include a copy with the reference. Are these data composite samples or single samples? The sediment sample data comes from a figure (Figure 10, page 68) entitled "Adjusted total sediment Pb concentrations and proportional representation of the five sequentially extracted fractions." Again, the original data and QA/QC information should be provided if possible. *not so*

Cadmium and zinc were not included in the observed release. It is recommended that they be included providing the documentation will allow it.

The background and hit samples in the documentation do not demonstrate that the observed release is caused by the tailings pile near Desloge, Missouri, rather than as a result of a regional problem in the drainage area known as the "Old Lead Belt." Reference 13, page 4-2, indicates that the background sample (Irondale) is over 10 stream miles from the hit (Desloge) sample. The downstream samples (Washington State Park, and Browns Ford) are 20 and 32 stream miles from the Desloge sample respectively. Samples taken over these distances are not useful in attributing the lead to the Big River Tailings pile (BRT) because of numerous other tailings piles in the area. (Reference 9, page 135 states that some 227 million MT [metric tons?] of tailings were produced in the Old Lead Belt.) Reference 12, page 5, indicates a tailings pile near Leadwood and downstream from the Irondale sample. Reference 12 also indicates tailings piles at Elvins and the city of Flat River which could enter the Big River between BRT site and the two downstream hit samples. There appears to be additional and more recent analytical data available in Reference 12, Figure 3, page 13, which

shows lead in the sediment and water upstream of the BRT site at concentrations as large or nearly as large as at BRT site. These data seem to contradict the attribution to BRT.

Hazardous Waste Quantity

See comments under ground water route- waste characteristics

AIR ROUTE

Contaminants Detected

Because the air release is based on photodocumentation of airborne particulates and analytical data showing the presence of hazardous constituents in the mine tailings, a background sample is not necessary. However, if a background sample is included in the package then the background sample should be upwind of the site. No information on wind direction was provided in the documentation record. Without this information, background samples numbered 11, 12, and 13 cannot be evaluated. Furthermore, the distance from the site to the background samples is large (2.5 to 3 miles) considering that there are numerous tailings ponds in the vicinity of the site. This makes it all the more important to know the prevalent wind direction and the specific wind direction on the day of sampling.